Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_

Physics –Ms. Holland

Bouncing Balls Lab

Pre-Exploration:

1. What factors do you think will determine how high a ball will bounce if dropped from a fixed height?
2. Which of the balls in this classroom do you think will bounce the highest? Why?
3. Look of the formulas for gravitational potential energy and record them in the space below.
4. What does *conservation of energy* mean? When a ball is dropped, is energy conserved? Why or why not?

Exploration:

1. Take a ball of your choosing and a meter stick from the front of the room.
2. Find a space in which to work and set up your meter stick so that you can drop the ball from a fixed height and record how high it bounces.
3. Use the initial height to calculate the potential energy of the ball and record in the table below. Then, one member of your group should drop the ball while the other records how high (in meters) it bounces. Try to observe from eye level. Calculate the final potential energy after the bounce and record in the table.
4. Repeat Step 3 for four more trials. The ball does not need to be dropped from the same height every time.
5. Calculate the “efficiency” of the bounce of your ball by dividing the final potential energy of the ball by the initial, and fill in the table below. Compute the average.

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| Initial Potential Energy (before bounce) | Final Potential Energy (after bounce) | Efficiency **η**= GPEf/GPEi |
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| Average Efficiency of Ball | |  |